

ALASKA FEDERAL OFFSHORE
Descriptions of Geologic Plays
1995 National Resource Assessment
U.S. Minerals Management Service

COOK INLET ASSESSMENT PROVINCE
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Federal waters of Cook Inlet basin include three plays: (1) the Tertiary stratigraphic play, (2) the Mesozoic stratigraphic play, and (3) the Mesozoic structural play.

Play 1 (UACI0101¹). Tertiary Stratigraphic Play : This play is restricted to the northernmost part of the assessment area north of the Augustine-Seldovia arch. It occurs in the southernmost extension of the Tertiary depocenter and involves stratigraphic traps. Potential source rocks are Upper Triassic carbonates and Middle Jurassic marine siltstones. Nonmarine sandstones and conglomerates of Eocene and Oligocene age are the reservoir targets. Those rocks include braided stream deposits of alluvial fans shed from the margins of the basin, and fluvial deposits that developed in the axis of the basin. Reservoir-rock properties are assumed to be analogous to those of the upper Cook Inlet oil fields as reported by the Alaska Oil and Gas Conservation Commission (AOGCC, 1995).

Play 2 (UACI0201). Mesozoic Stratigraphic Play : This play is probably best developed in the central and southern parts of lower Cook Inlet and Shelikof Strait. This play involves stratigraphic traps in turbidite sandstones within marine siltstone sections. The turbidites may have developed in submarine fan complexes in the Upper Cretaceous Kaguyak Formation. Potential source rocks are Upper Triassic carbonates or Middle Jurassic marine siltstones. According to Magoon and Anders (1992), oil in the lower Cook Inlet-Alaska Peninsula area migrated from both Upper Triassic and Middle Jurassic sources during Late Cretaceous to early Tertiary time.

Play 3 (UACI0301). Mesozoic Structural Play : This play covers most of the assessment area and involves anticlines and fault traps. Many of the mapped anticlines were tested unsuccessfully in previous exploratory drilling. Oil shows were present in Upper Cretaceous strata in the Arco Y-0097 well and the Marathon Y-0086 well. Potential source rocks are Upper Triassic carbonates or Middle Jurassic marine siltstones. The best reservoir rocks are probably nonmarine sandstones in fan-delta deposits in the Upper Cretaceous Kaguyak Formation. Marine sandstones

¹The "UA" Code is the "Unique Assessment Identifier" for each play, and is the principal guide to GRASP data files.

in both Lower and Upper Cretaceous strata are also potential reservoirs.

OIL AND GAS ENDOWMENTS OF COOK INLET PLAYS

Risked, Undiscovered, Conventionally Recoverable Oil and Gas

PLAY NO.	PLAY NAME (UAI * CODE)	OIL (BBO)			GAS (TCFG)		
		F95	MEAN	F05	F95	MEAN	F05
1.	Tertiary Stratigraphic (UACI0101)	0.000	0.276	0.723	0.000	0.291	0.776
2.	Mesozoic Stratigraphic (UACI0201)	0.000	0.195	0.515	0.000	0.242	0.642
3.	Mesozoic Structural (UACI0301)	0.088	0.266	0.508	0.116	0.360	0.727
	FASPAG AGGREGATION	0.323	0.738	1.386	0.402	0.893	1.649

* *Unique Assessment Identifier, code unique to play.*

REFERENCES CITED

AOGCC (Alaska Oil and Gas Conservation Commission), 1995, 1994 Statistical Report: Alaska Oil and Gas Conservation Commission, 228 p. (available from 3001, Porcupine Drive, Anchorage, AK 99501-3192).

Magoon, L.B., and Anders, D.E., 1992, Oil-to-source-rock correlation using carbon-isotopic data and biological marker compounds, Cook Inlet-Alaska Peninsula, Alaska, *in* Moldowan, J.M., Albrecht, P. and Philp, R.P., eds., Biological markers in sediments and petroleum: Englewood Cliffs, Prentice-Hall, p. 241-274.